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EXAMINER	
PATEL, JAY P	
ART UNIT	PAPER NUMBER
2616	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	02/09/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/092,109	TWOMEY ET AL.	
	Examiner	Art Unit	
	Jay P. Patel	2616	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 November 0206*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-30* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3,6-16,18-25 and 28-30* is/are rejected.

7)☒ Claim(s) *4,5,17,26 and 27* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. This office action is in response to the response field 11/20//2006.

2. This office action is made non-final.

3. Claims 1-30 are pending.

4. Claims 1-3, 6-16, 18-25 and 28-30 have been rejected.

5. Claims 4-5, 17 and 26-27 have been objected to.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims 1-3, 7, 14-16, 18-25 and 29-30 rejected under 35 U.S.C. 103(a) as being unpatentable over Cantwell et al. (US Patent 6493346 B1) in view of Krishnan et al. (US Patent 4918597).

8. In regards to claim 1, Cantwell teaches in figure 1 a link 30, which carries unchannelized frame relay TDM traffic (obtaining a pre-formatted time division multiplexed frame) (see figure 1 and column, lines 57-59).

The output of frame relay circuit 24 in figure 1 represents DS3 ATM data transmitted over link 34 to an ATM relay switch 36 (filling the frame with voice data formatted as asynchronous transfer mode adaptation layer packets) (see column 2, lines 63-65). The ATM relay switch 36 transmits ATM data over link 38 to a frame relay network such as a DS1 trunk (see column 2, lines 64-66).

Cantwell fails to teach writing data from a TDM channel into a unit in a frame pointed to by a pointer associated with a channel. Krishnan teaches the above-mentioned limitation in figure 3. Counter apparatus 64 contains current output word pointer 72 (COWP 72). COWP 72 is incremented for every frame and points to the next word that is to be transferred to a TDM bus (channel) (see column 5, lines 30-39).

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to implement a pointer for associating a channel. The motivation to implement a pointer would be to more efficiently use buffer space by having a pointer instead of having a specific location within the memory to store the channel.

In regards to claim 2, the frame relay circuit 24 in figure 1 of Cantwell anticipates obtaining a pre-formatted frame for a database of frames.

In regards to claim 3, the frame relay access devices 28 in figure 1 of Cantwell anticipate receiving voice data from a time division multiplex stream. The TDM matrix 26 in figure 1 anticipates processing the data in a time division multiplex processor. The TDM matrix 26 is connected to the frame relay access devices 28 and communicates with these devices over T1 or E1 links 30 (see column 2, lines 49-52).

In regards to claims 7 and 14, filling the frame with voice data from an asynchronous transfer mode adaptation layer packet, is anticipated by ATM relay switch 36 in figure 1 of Cantwell. The ATM relay switch also anticipates an ATM processor. The ATM relay switch 36 transmits ATM data over link 38 to a frame relay network such as a DS1 trunk (see column 2, lines 64-66).

9. In regards to claim 15, The TDM matrix 26 and the frame relay circuit 24 in figure 1 of Cantwell read on a processor.

A TDM frame database, to store pre-formatted frames reads on the frame relay access devices 28. The frame relay access device 28 is interconnected to a local area network, or host link 32 and converts Internet protocol, and system network architecture data to and from frame relay data. The conversion is inclusive of adding data link connection identifiers address; frame check sequence and other frame overhead (see column 2, lines 53-58).

The TDM matrix 26 also reads on the processor-accessing frame from said frame database to fill the frames with voice data. The TDM matrix 26 is connected to the frame relay access devices 28 and communicates with these devices over T1 or E1 links 30 (see column 2, lines 49-52).

Cantwell fails to teach writing data from a TDM channel into a unit in a frame pointed to by a pointer associated with a channel. Krishnan teaches the above-mentioned limitation in figure 3. Counter apparatus 64 contains current output word pointer 72 (COWP 72). COWP 72 is incremented for every frame and points to the next word that is to be transferred to a TDM bus (channel) (see column 5, lines 30-39).

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to implement a pointer for associating a channel. The motivation to implement a pointer would be to more efficiently use buffer space by having a pointer instead of having a specific location within the memory to store the channel.

In regards to claim 16, the TDM matrix 26 in figure 1 of Cantwell reads on the TDM processor. Furthermore, the FRAD 28 is connected to the host over link 32 and FRAD 28

converts data to frame relay data (see column 2, lines 52-55). The FRAD 28 is connected to TDM matrix 26 via link 30. Therefore, the processor accessing the frame form the pre-formatted frame database to fill the frames with voce data from time division multiplex channels reads on the FRAD 28 being connected to the TDM matrix 26.

In regards to claim 18, the frame relay engine 98 within the frame relay circuit 24 (see figure 4 in Cantwell) reads on the processor reading data from each active channel and writing data into frames. The frame relay engine 98 converts PDUs to frame relay packets (see column 4, lines 18-23).

In regards to claim 19, the frame relay engine 98 in Cantwell performs conversions and writes converted data via PCI bus 96 to SAR (necessary for ATM switch) block 92 (see column 4, lines 18-23). Therefore, the frame relay engine and the conversion to SAR block 92 anticipates data in frame being divided into units which correspond to asynchronous transfer mode packets.

In regards to claim 21 and 22, filling the frame with voice data from an asynchronous transfer mode adaptation layer packet, is anticipated by ATM relay switch 36 in figure 1 of Cantwell. The ATM relay switch also anticipates an ATM processor. The ATM relay switch 36 transmits ATM data over link 38 to a frame relay network such as a DS1 trunk (see column 2, lines 64-66).

In regards to claim 23, the frame relay circuit 24 in figure 1 of Cantwell and the TDM matrix 26 in figure 1 are coupled to the ATM switch 36 via link 34. Therefore the link 34 reads on the coupling of the TDM processor with the ATM processor.

10. In regards to claim 24, link 30 in figure 1 of Cantwell carries unchannelized frame relay TDM traffic (an article to obtain a pre-formatted time division multiplexed frame) (see figure 1 and column, lines 57-59).

The output of frame relay circuit 24 in figure 1 represents DS3 ATM data transmitted over link 34 to an ATM relay switch 36 (an article to fill the frame with voice data formatted as asynchronous transfer mode adaptation layer packets) (see column 2, lines 63-65). The ATM relay switch 36 transmits ATM data over link 38 to a frame relay network such as a DS1 trunk (see column 2, lines 64-66).

Cantwell fails to teach writing data from a TDM channel into a unit in a frame pointed to by a pointer associated with a channel. Krishnan teaches the above-mentioned limitation in figure 3. Counter apparatus 64 contains current output word pointer 72 (COWP 72). COWP 72 is incremented for every frame and points to the next word that is to be transferred to a TDM bus (channel) (see column 5, lines 30-39).

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to implement a pointer for associating a channel. The motivation to implement a pointer would be to more efficiently use buffer space by having a pointer instead of having a specific location within the memory to store the channel.

In regards to claim 25, frame relay access devices 28 in figure 1 of Cantwell reads on receiving voice data from a time division multiplex stream. The TDM matrix 26 in figure 1 anticipates processing the data in a time division multiplex processor. The TDM matrix 26 is connected to the frame relay access devices 28 and communicates with these devices over T1 or E1 links 30 (see column 2, lines 49-52).

Furthermore, the frame relay engine 98 within the frame relay circuit 24 (see figure 4) reads on reading data from each active channel and writing data into frames. The frame relay engine 98 converts PDUs to frame relay packets (see column 4, lines 18-23).

In regards to claim 29, storing instructions that enable the device to receive data from an ATM cell stream, reading data from said cells and to place said data in a pre-formatted frame is reads on by ATM relay switch 36 in figure 1 of Cantwell. The ATM relay switch also anticipates an ATM processor. The ATM relay switch 36 transmits ATM data over link 38 to a frame relay network such as a DS1 trunk (see column 2, lines 64-66).

In regards to claim 30, providing the frame to a TDM processor is reads on link 34 in Cantwell, which connects the ATM relay switch 36 to the frame relay circuit 24 and the TDM matrix 26

The TDM matrix 26 also reads on injecting voice data into a TDM stream. The TDM matrix 26 is connected to the frame relay access devices 28 and communicates with these devices over T1 or E1 links 30 (see column 2, lines 49-52).

11. Claims 6 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cantwell et al. (US Patent 6493346 B1) in view of Krishnan et al. (US Patent 4918597) further in view of Hosein (US Patent 6735191 B1).

12. In regards to claim 6, Cantwell in combination with Krishnan teaches all the limitations of parent claims 1 and 3 as stated above. Cantwell and Krishnan fail to particularly teach filling the frame with a plurality of units of voice data, from said time division multiplex system. Hosein teaches the above-mentioned limitation. Figure 1 in Hosein shows a plurality of TDM

units 100 that combine multiple voice traffic channels such as 24 DSO channels into a single T1 circuit (see column 3, lines 56-58).

Therefore it would have been obvious to one skilled in the art at the time the invention was made to combine the ATM to TDM conversion disclosed by Cantwell with using the TDM units used to frame data as disclosed by Hosein. The motivation to combine would to use multiple TDM units to combine various voice channels and frame the data for transport.

In regards to claim 8, Cantwell in combination with Krishnan teaches all the limitations of parent claims 1 and 7 as stated above. Cantwell and Krishnan fail to particularly teach storing the packet in a unit and providing a plurality of units in a frame. Hosein teaches the above-mentioned limitations. Figure 1 in Hosein shows a plurality of TDM units 100 that combine multiple voice traffic channels such as 24 DSO channels into a single T1 circuit (see column 3, lines 56-58). Furthermore, a number of T1 circuits are combined at an AAL2 multiplexer 200 to create a virtual circuit 210 (see column 3, lines 63-66).

Therefore it would have been obvious to one skilled in the art at the time the invention was made to combine the ATM to TDM conversion disclosed by Cantwell with using the TDM units used to frame data as disclosed by Hosein. The motivation to combine would to use multiple TDM units to combine various voice channels and frame the data for transport.

13. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cantwell et al. (US Patent 6493346 B1), Krishnan et al. (US Patent 4918597) and Hosein (US Patent 6735191 B1) in view of Parruck et al. (US Patent 6751214 B1).

In regards to claim 9, Cantwell in combination with Krishnan and Hosein teach the limitations of parent claims 1, 7 and 8. Neither Cantwell, Krishnan nor Hosein teach determining whether the frame is full. Parruck teaches the above-mentioned limitation. In regards to figure 2, Parruck teaches that if the frame is full, a packet may be broken up to transported in different frames (see column 2, lines 6-8).

Therefore, it would have been obvious to one skilled in the art at the time the inventions was made to combine the ATM to TDM conversion disclosed by Cantwell and using TDM units used to frame data as disclosed by Hosein with the determination of the frame being full as disclosed by Parruck. The motivation to combine would that if it is determined that a frame is full, any subsequent data within the frame can be broken up and another frame can be added.

14. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cantwell et al. (US Patent 6493346 B1), Krishnan et al. (US Patent 4918597), Hosein (US Patent 6735191 B1), Parruck et al. (US Patent 6751214 B1) in view of Hosein (US Patent 6728272 B1) (herein referred to as Hosein B).

In regards to claim 10, Cantwell, Krishnan, Hosein and Parruck fail to teach determining whether a timer has expired. Hosein B teaches the above-mentioned limitation. In figure 1, communication devices 100 and 150 communicate using the HDLC protocol. Using a T1 frame, if no data is present for 125 microseconds, the corresponding T1 frame will contain 24 frame delimiters (see column 4, lines 39-48). The 125 microseconds period reads on determining whether a timer has expired during the filling of the frame.

Therefore it would have been obvious to one skilled in the art at the time the invention was made to combine the ATM to TDM conversion disclosed by Cantwell, using TDM units used to frame data as disclosed by Hosein, the determination of the frame being full as disclosed by Parruck with the 125 microsecond timer window disclosed by Hosein B. The motivation to combine would be to implement a timing window upon whose expiration the system can use another frame to fill subsequent data.

15. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cantwell et al. (US Patent 6493346 B1), Krishnan et al. (US Patent 4918597), Hosein (US Patent 6735191 B1), Parruck et al. (US Patent 6751214 B1), in view of Stacey et al. (US Patent 7020141 B1).

In regards to claim 11, Cantwell, Krishnan, Hosein and Parruck fail to teach whether data has been received with a connection ID that matches the connection ID of the data already stored. Stacey teaches that a VCC identifier can be used to look up ATM cell layer port queue identifier (see column 7, lines 33-37). Therefore, determining whether data has been received with a connection ID that matches the connection ID of data already stored reads on mapping to the VCC identifier with an ATM cell layer port queue identifier.

Therefore it would have been obvious to one skilled in the art at the time the invention was made to combine the ATM to TDM conversion disclosed by Cantwell, using TDM units used to frame data as disclosed by Hosein, the determination of the frame being full as disclosed by Parruck, the 125 microsecond timer window disclosed by Hosein B with the mapping of the VCC connection ID with the ATM cell layer port queue ID. The motivation to combine would to identify and match the connection with a proper space allocated to the connection in memory.

16. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cantwell et al. (US Patent 6493346 B1), Krishnan et al. (US Patent 4918597), Hosein (US Patent 6735191 B1), Parruck et al. (US Patent 6751214 B1), Stacey et al. (US Patent 7020141 B1) in view Dove et al. (7006497 B2).

In regards to claim 12, Cantwell, Krishnan, Hosein, Parruck, and Stacey fail to teach a connection ID identifying a TDM channel. Dove teaches the above-mentioned limitation. In figure 3C Dove shows a VCI field 32. The VCI field for TDM packets acts as a connection identifier (see column 7, lines 37-46). Therefore, the VCI 32 reads on using the connection ID in each unit to identify a time division multiplex channel of a voice call.

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to combine the ATM to TDM conversion disclosed by Cantwell, using TDM units used to frame data as disclosed by Hosein, the determination of the frame being full as disclosed by Parruck, the 125 microsecond timer window disclosed by Hosein B with the mapping of the VCC connection ID with the ATM cell layer port queue ID. The motivation to combine would to identify and match the connection with a proper space allocated to the connection in memory.

17. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cantwell et al. (US Patent 6493346 B1), Krishnan et al. (US Patent 4918597), Hosein (US Patent 6735191 B1), Parruck et al. (US Patent 6751214 B1), Stacey et al. (US Patent 7020141 B1), Dove et al. (7006497 B2) in view of Dove et al. (US Patent 7050428 B1) (Herein referred to as Dove B).

In regards to claim 13, Cantwell, Krishnan, Hosein, Parruck, Stacey and Dove fail to teach setting a pointer for a TDM channel to the address of a payload in a unit. Dove B teaches that a source pointer in provided within the TSI 64 in figure 7 to address the memory for the time slots for writing operations to a stack plane. Therefore, the source pointer within the TSI 64 reads on a pointer for a TDM channel to the address of a payload in a unit.

Therefore it would have been obvious to one skilled in the art at the time the invention was made to combine the ATM to TDM conversion disclosed by Cantwell, using TDM units used to frame data as disclosed by Hosein, the determination of the frame being full as disclosed by Parruck, the 125 microsecond timer window disclosed by Hosein B with the mapping of the VCC connection ID, the ATM cell layer port queue ID with the source pointer provided by Dove B. The motivation to combine would be to provide a more efficient way to address data within a memory without actually using up any space within the memory for addressing.

18. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cantwell et al. (US Patent 6493346 B1) and Krishnan et al. (US Patent 4918597) in view of Knappe (US Patent 6922396 B1).

In regards to claim 20, Cantwell in combination with Krishnan teaches all the limitations of parent claims 15, 18 and 19. Neither Cantwell nor Krishnan in particular teaches the processor sending the frame to a queue after it has been filled. Knappe teaches the above-mentioned limitation. In figure 3, Knappe discloses a routing device 80 inclusive of a processor, which, assists in sending a packet from a receiving port to a corresponding queue of the sending port (see column 10, lines 8-10).

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to combine the ATM to TDM conversion disclosed by Cantwell and the writing of a unit into a frame pointed to by a pointer taught by Krishnan with the routing device disclosed by Knappe. The motivation to combine would to provide an easy transition of a frame from a receiving to a sending port.

19. Claim 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cantwell et al. (US Patent 6493346 B1) and Krishnan et al. (US Patent 4918597) in view of Hosein (US Patent 6735191 B1).

In regards to claim 28 Cantwell in combination with Krishnan teaches all the limitations of parent claims 24 and 25 as stated above. Neither Cantwell nor Krishnan teach filling the frame with a plurality of units of voice data, from said time division multiplex system. Hosein teaches the above-mentioned limitation. Figure 1 in Hosein shows a plurality of TDM units 100 that combine multiple voice traffic channels such as 24 DSO channels into a single T1 circuit (see column 3, lines 56-58).

Therefore it would have been obvious to one skilled in the art at the time the invention was made to combine the ATM to TDM conversion disclosed by Cantwell and the writing of a unit into a frame pointed to by a pointer taught by Krishnan with using the TDM units used to frame data as disclosed by Hosein. The motivation to combine would to use multiple TDM units to combine various voice channels and frame the data for transport.

Response to Arguments

20. Applicant's arguments filed 11/20/2006 have been fully considered but they are not persuasive.

Specifically, the applicant argues that COWP 72 in Krishnan (US Patent 4918597) fails to teach ***where*** to write and only teaches ***what*** to write. The applicant cites that the COWP 72 points "to the next word to be transferred to the TDM bus 38 via the output buffer 14" (see column 5, lines 31-34). The examiner points that the word is to be transferred ***to the TDM bus 38***; therefore Krishnan does teach where to write the word.

Conclusion

Claims 4-5, 17 and 26-27 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jay P. Patel whose telephone number is (571) 272-3086. The examiner can normally be reached on M-F 9:00 am - 5:00 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hassan Kizou can be reached on (571) 272-3088. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JPP 21sw7

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